IN THE UNITED STATES

PATENT AND TRADEMARK OFFICE

APPLICANTS: Gautam Vaswani, Daniel P. Wilde & Thomas Dye

SERIAL NO.:   08/856,546

FILING DATE: May 15, 1997

TITLE: Software-Based Dithering Method And Apparatus Using RAMP Probability Logic

EXAMINER: Unknown

GROUP ART UNIT: 2775

ATTY. DKT. NO.:   3375 US

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

REVOCATION AND POWER OF ATTORNEY

SIR:

The undersigned officer of **S3 INCORPORATED**, assignee of record of the entire right, title and interest in and to the above-identified patent application, hereby revokes all prior powers of attorney previously appointed in the above-referenced application, and hereby appoints:

Name	Registration Number	Name	Registration Number
Greg T. Sueoka	33,800	Brian M. Hoffman	39,713
Sanjay Prasad	36,247	Rajiv P. Patel	39,327

as its attorneys to prosecute the above-referenced application and any continuing applications, to maintain the ensuing patent, and to transact all other business in the U.S. Patent and Trademark Office connected therewith.

Attached to this power is a Certificate under 37 CFR § 3.73(b).

Please direct all communication relative to the above-referenced application to the following new correspondence address:

Greg T. Sueoka
Fenwick & West LLP
Two Palo Alto Square
Palo Alto, CA 94306
Tel:. (650) 858-7194
Fax.: (650) 494-1417

Respectfully submitted,
S3 INCORPORATED

Date: June 4, 1998   Signature: _Walter Amaral_

Name: Walter D. Amaral

Title: Senior V.P. Finance & CFO

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Certificate Under 37 CFR § 3.73(b)

Applicant: Daniel P. Wilde, Thomas Dye & Gautam Vaswani

Application No.: 08/856,546

Filing Date: May 15, 1997

Name of Assignee: S3 Incorporated

Type of Assignee (e.g. corporation, partnership, university, government agency, etc.): corporation

The above-mentioned Assignee certifies that it is the assignee of the entire right, title and interest in the patent application identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached; OR

B. ☑ A chain of title from the inventor(s), of the patent application identified above, to the current assignee as shown below:

1. From: Daniel P. Wilde, Thomas Dye & Gautam Vaswani
   To: Cirrus Logic, Inc.
   The document was recorded in the Patent and Trademark Office at
   Reel: 8563 and Frame: 0724, or for which a copy thereof is attached.

2. From: Cirrus Logic, Inc.
   To: S3 Incorporated
   The document was recorded in the Patent and Trademark Office at
   Reel: _____ and Frame: _____, or for which a copy thereof is attached.

3. From: _____
   To: _____
   The document was recorded in the Patent and Trademark Office at
   Reel: _____ and Frame: _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☑ Copies of assignments or other documents in the chain of title are attached.

The undersigned has reviewed all the documents in the chain of title of the patent application identified above and, to the best of undersigned's knowledge and belief, title is in the assignee identified above.

The undersigned (whose title is supplied below) is empowered to sign this certificate on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

_____6/26/78_____
Date

_____
Signature

Greg T. Sueoka
Name

Attorney of Record
Title

PATENT ASSIGNMENT

WHEREAS, Cirrus Logic, Inc., a California corporation with offices located at 3100 West Warren Avenue, Fremont, California 94538, ("Assignor") is the sole and exclusive owner of the entire right, title and interest in certain United States and foreign patents and patent applications and the inventions covered thereby, identified in the attached Exhibit A ("Acquired Patents"); and

WHEREAS, S3 Incorporated, a Delaware corporation with offices located at 2801 Mission College Blvd; Santa Clara, California, 95054 ("Assignee") is desirous of acquiring the entire right, title and interest in, to and under said Acquired Patents--subject to the Patent Sale, Assignment and Cross-License Agreement by and among Assignee, Assignor and Assignor's subsidiary, Cirrus Logic International Ltd., dated as of January 26, 1998, (the "Cross-License Agreement");

NOW, THEREFOR, to all whom it may concern; be it known for good, sufficient and valuable consideration, the receipt of which is hereby acknowledged, Assignor does hereby sell, assign, transfer and set over to Assignee, said Acquired Patents for its own use and enjoyment and that of its successors, assigns or other legal representatives, to the end of the term or terms for which said Acquired Patents are or may be granted or issued--subject to the Cross-License Agreement.

IN WITNESS WHEREOF, Assignor and Assignee have caused these presents to be signed by their officers duly authorized to execute this agreement of behalf of the parties recited above.

CIRRUS LOGIC, INC.

By: _____
Robert F. Donohue
Its: Vice President; Chief Legal Officer, General Counsel, and Secretary

S3 Incorporated

By: _____
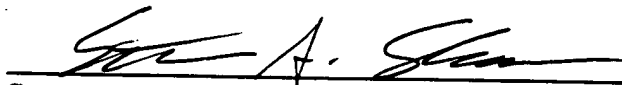Terry N. Holdt
Its: Chairman and CEO

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State of California

ss

County of Alameda

On _____5/13/98_____, before me; Steven A. Shaw, Notary Public, personally appeared Robert F. Donohue personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

_____
Steven A. Shaw
Notary Public in and for the State of California
My Commission Expires: April 25, 2001

STEVEN A. SHAW
Commission # 1124852
Notary Public — California
Alameda County
My Comm. Expires Apr 25, 2001

State of California

ss

County of Santa Clara

On _March 16, 1998_____, before me; _JACQUELINE F. ELLISON (Notary Public)_ personally appeared Terry N. Holdt personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

_____
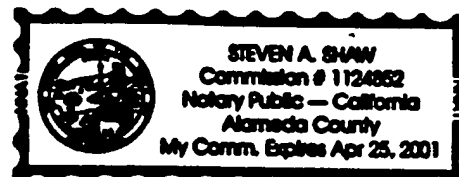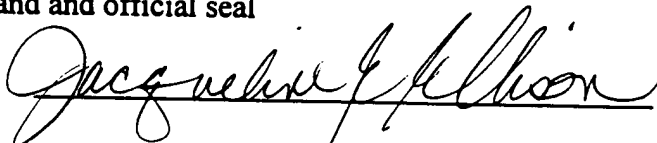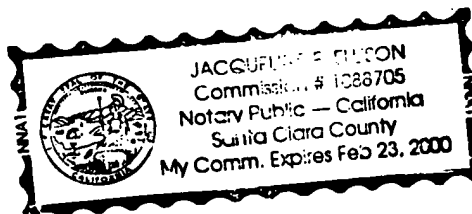Notary Public in and for the State of California
My Commission Expires: _Feb 23, 2000_

JACQUELINE F. ELLISON
Commission # 1088705
Notary Public — California
Santa Clara County
My Comm. Expires Feb 23, 2000

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Patent Number	Title
5,581,279	VGA CONTROLLER CIRCUITRY
5,608,864	VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS
5,521,614	METHOD AND APPARATUS FOR EXPANDING AND CENTERING VGA TEXT AND GRAPHICS
5,537,128	SHARED MEMORY FOR SPLIT-PANEL LCD DISPLAY SYSTEMS
5,625,379	VIDEO PROCESSING APPARATUS, SYSTEMS AND METHODS
5,402,513	VIDEO WINDOW GENERATOR WITH SCALABLE VIDEO
5,293,159	METHOD AND APPARATUS FOR PRODUCING PERCEPTION OF HIGH QUALITY GRAYSCALE SHADING ON DIGITALLY COMMANDED DISPLAYS
5,241,642	IMAGE MEMORY CONTROLLER FOR CONTROLLING MULTIPLE MEMORIES AND METHOD OF OPERATION
5,422,827	INTEGRATED VIDEO SCALING AND SHARPENING FILTER
5,440,683	VIDEO PROCESSOR MULTIPLE STREAMS OF VIDEO DATA IN REAL-TIME

Cirrus Ref. No.	Serial No. Patent No.	Title
0114	08/061,802	PROCESS FOR PRODUCING SHADED COLORED IMAGES USING DITHERING
0125	08/402.862	VIDEO PROCESSING APPARATUS. SYSTEMS AND METHODS
0129	08/098,846	A SYSTEM AND METHOD FOR THE MIXING OF GRAPHICS AND VIDEO SIGNALS (abandoned)
0129C	08/683,102	A SYSTEM AND METHOD FOR THE MIXING OF GRAPHICS AND VIDEO SIGNALS
0319	08/474,416	BRIGHTNESS CONTROL FOR LIQUID CRYSTAL DISPLAYS
0329	5,668,941	OPTIMUM IMPLEMENTATION OF X-Y CLIPPING ON PIXEL BOUNDARY
0353	08/536,315	METHOD AND APPARATUS FOR UPSCALING VIDEO IMAGES IN A GRAPHICS CONTROLLER CHIP
0369	5,703,618	A METHOD AND APPARATUS FOR UPSCALING VIDEO IMAGES WHEN PIXEL DATA USED FOR UPSCALING A SOURCE VIDEO IMAGE ARE UNAVAILABLE
0379	08/576,870	METHOD AND APPARATUS FOR PROCESSING GRAPHICS AND VIDEO PIXEL DATA IN A GRAPHICS CONTROLLER
0380	5,675,773	A GRAPHICS DISPLAY SYSTEM WITH A LOW LEVEL HARDWARE DEPENDENT GRAPHICS LIBRARY
0391	08/619.203	HARDWARE ASSIST FOR YUV DATA FORMAT CONVERSION TO SOFTWARE MPEG DECODER
0469	08/673,774	OBJECT REFERENCED MEMORY MAPPING
0479	08/672,620	REGISTER SET REORDERING FOR A GRAPHICS PROCESSOR BASED UPON THE TYPE OF PRIMITIVE TO BE RENDERED
0484	08/707,937	APPARATUS, SYSTEMS AND METHODS FOR CONTROLLING DATA OVERLAY IN MULTIMEDIA DATA PROCESSING AND DISPLAY SYSTEMS USING MASK TECHNIQUES
0495	08/724,618	INSTRUCTION FORMAT FOR ENSURING SAFE EXECUTION OF DISPLAY LIST
0520	08/841,360	METHOD FOR CONFIGURING A COMPOSITING BUFFER INTO VARIABLE BAND SIZES
0526	08/803,460	METHOD FOR TRIANGLE SUBDIVISION IN COMPUTER GRAPHICS TEXTURE MAPPING TO ELIMINATE ARTIFACTS IN HIGH PERSPECTIVE POLYGONS

0527	08/777,557	IMPROVED DITHERING METHOD AND APPARATUS USING RAMP PROBABILITY LOGIC
0527P	08/856,546	SOFTWARE-BASED DITHERING METHOD AND APPARATUS USING RAMP PROBABILITY LOGIC
0546	08/803,461	METHOD AND APPARATUS FOR ADJUSTING GRAPHICS PROCESSING PROCEDURES BASED ON A SELECTABLE SPEED/QUALITY GAUGE
0548	08/818,053	METHOD AND APPARATUS FOR SHORTEN DISPLAY LIST INSTRUCTIONS
0591	08/821,125	METHOD AND APPARATUS FOR PROGRAMMING A GRAPHICS SUBSYSTEM REGISTER SET
0595	08/822,069	METHOD FOR EMULATING VIDEO PORT MANAGER INTERFACE
0734	08/968,309	OPPOSING DIRECTIONAL FILL CALCULATORS IN A GRAPHICS PROCESSOR

Unfiled Draft Applications

<u>Cirrus Ref. Number</u>   <u>Title</u>

0515   .   GRAPHICS PRIMITIVES DECOMPOSITION USING EDGE FUNCTIONS AND RECURSIVE TILE SUBDIVISION

0541   PARALLEL ARCHITECTURE FOR GRAPHICS PRIMITIVES DECOMPOSITION

FOREIGN PATENT APPLICATIONS

<u>EUROPE</u>

0168EP 95917194.3 VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS

0215EP 93301013.4 VIDEO PROCESSOR MULTIPLE STREAMS OF VIDEO DATA IN REAL-TIME

0369EP 96308452.0 A METHOD AND APPARATUS FOR UPSCALING VIDEO IMAGES WHEN PIXEL DATA USED FOR UPSCALING A SOURCE VIDEO IMAGE ARE UNAVAILABLE

0380EP 96119990.8 A GRAPHICS DISPLAY SYSTEM WITH A LOW LEVEL HARDWARE DEPENDENT GRAPHICS LIBRARY

0391EP 97104446.6 HARDWARE ASSIST FOR YUV DATA FORMAT CONVERSION TO SOFTWARE MPEG DECODER

0469EP 97304347.8 OBJECT REFERENCED MEMORY MAPPING

0479EP 97304513.1 REGISTER SET REORDERING FOR A GRAPHICS PROCESSOR BASED UPON THE TYPE OF PRIMITIVE TO BE RENDERED

<u>JAPAN</u>

0168JP 7-528390 VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS

0215JP 59,411/93 VIDEO PROCESSOR MULTIPLE STREAMS OF VIDEO DATA IN REAL-TIME

0369JP 8-312384 A METHOD AND APPARATUS FOR UPSCALING VIDEO IMAGES WHEN PIXEL DATA USED FOR UPSCALING A SOURCE VIDEO IMAGE ARE UNAVAILABLE

0380JP 8-341801 A GRAPHICS DISPLAY SYSTEM WITH A LOW LEVEL HARDWARE DEPENDENT GRAPHICS LIBRARY

0391JP 9-687573 HARDWARE ASSIST FOR YUV DATA FORMAT CONVERSION TO SOFTWARE MPEG DECODER

0469JP 9-167231 OBJECT REFERENCED MEMORY MAPPING

0479JP 9-172331 REGISTER SET REORDERING FOR A GRAPHICS PROCESSOR BASED UPON THE TYPE OF PRIMITIVE TO BE RENDERED

<u>SOUTH KOREA</u>

0168KR 96-706097 VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS

<u>TAIWAN</u>

0369TW 85114412 A METHOD AND APPARATUS FOR UPSCALING VIDEO IMAGES WHEN PIXEL DATA USED FOR UPSCALING A SOURCE VIDEO IMAGE ARE UNAVAILABLE

0380TW 86102127 A GRAPHICS DISPLAY SYSTEM WITH A LOW LEVEL HARDWARE DEPENDENT GRAPHICS LIBRARY

0391TW	86102702	HARDWARE ASSIST FOR YUV DATA FORMAT CONVERSION TO SOFTWARE MPEG DECODER
0469TW	86107696	OBJECT REFERENCED MEMORY MAPPING
0479TW	86107629	REGISTER SET REORDERING FOR A GRAPHICS PROCESSOR BASED UPON THE TYPE OF PRIMITIVE TO BE RENDERED
0495TW	86114236	INSTRUCTION FORMAT FOR ENSURING SAFE EXECUTION OF DISPLAY LIST
0527TW	86120015	IMPROVED DITHERING METHOD AND APPARATUS USING RAMP PROBABILITY LOGIC

PCT

0168	PCT/US95/05259	VARIABLE PIXEL DEPTH AND FORMAT FOR VIDEO WINDOWS
0495	PCT/US97/17418	INSTRUCTION FORMAT FOR ENSURING SAFE EXECUTION OF DISPLAY LIST
0527	PCT/US97/23908	IMPROVED DITHERING METHOD AND APPARATUS USING RAMP PROBABILITY LOGIC
0595	_____ *	METHOD FOR EMULATING VIDEO PORT MANAGER INTERFACE

*Assignee may insert serial numbers for 0595 Taiwan and PCT application once they are known.

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